

REMARKS

Claims 1-18 are pending in this application. Claims 1, 2, 4, 8, 9, and 17 have been amended and claims 3, 10 and 12 cancelled. New claims 19 and 20 are added. Consequently, claims 1, 2 4-9, 11 and 13-20 remain under consideration. Support for the amendments to claim 1 can be found in claim 2 and claim 10 and in the specification at page 5 lines 23 to 28, at page 9, line 29 to page 10, line 2 and in the drawings. New claim 19 is a combination of existing claims 1, 2, 3, 5 and 10. Therefore, no new matter has been added. It is to be understood that amendment of a claim is not to be construed as a dedication to the public of any subject matter.

Double Patenting

Claims 2 and 12 were objected to under 37 CFR § 1.75 as being substantial duplicates. In response to this objection, claim 12 has been cancelled.

Claim Rejections - 35 USC § 112

Claims 1 -18 were rejected under 35 USC § 112 as being indefinite for failing to point out and distinctly claim the subject matter which applicant regards as the invention. This objection was raised due to lack of clarity in the use of the terms first and second blade. As requested by the Examiner, the claims have been reviewed for consistent naming of the blades and have been amended where necessary.

Claims Rejections - 35 USC § 102

The Examiner has rejected claims 1-3, 7, 11-17, under 35 USC § 102(b) as being anticipated by US Patent No. 2611591 to Longenecker, and US Patent No. 233820 to Peters.

Claims 1, 3 and 7 were rejected under 35 USC § 102(b) as being anticipated by US Patent No. 5839824 to Backman.

Claims 1 and 3 were rejected under 35 USC § 102(b) as being anticipated by US Patent No. 6149291 to Christenson.

Claims 1, 3 and 7 were rejected under 35 USC § 102(b) as being anticipated by US Patent No. 4730934 to Schwing.

Claims 1, 3 and 7 were rejected under 35 USC § 102(b) as being anticipated by JP 2002154112 to Kabaya Ind Co Ltd.

Claims 1, 3, 7 and 14 were rejected under 35 USC § 102(b) as being anticipated by US Patent No 4187028 to Pawley.

Claim 1 has been amended to specify that:

the first, generally helical, mixing blade helical mixing blade develops in a clockwise direction from an open end of the drum towards the drum head and the second blade extends in an anti-clockwise direction towards the drum head;

and, further, that

the first, generally helical, mixing blade defines a spillway formation adjacent the second blade and wherein the height of the second blade is greater than the height of the adjoining mixing blade at the point of intersection of the first, generally helical, mixing blade and the second blade, thereby to define a side wall of the spillway formation.

Applicant notes that the Examiner has indicated that the subject matter of claim 10 would be allowable in combination if re-written in independent form including all the limitations of the base claims. Applicant respectfully directs the Examiner's attention to claim 1 and claim 4 (which is the mirror image of claim 1 for "left hand drive" for left hand drive countries) which now include the limitations of claim 10, as does new claim 19.

Apart from the spillway of claim 10, the independent claims also distinguish over the cited prior art in that they recite a first generally helical mixing blade (in either a clockwise or anticlockwise sense) extending towards the drum head with second blade (developing in an opposite sense (i.e. clockwise if the first blade is anticlockwise and vice versa) extending from the first blade to the drum head.

This blade structure is unique to the applicant. Instead of the helical screw screwing/driving the mix of materials to the drum head where it may become compacted, the final part of the blade structure moves the mixture in the opposite direction to the major part of the first mixing blade, lifting the material upwards and towards the open end of the drum back where it came from, significantly improving the mixing process, and virtually eliminating the compaction concerns of Longenecker and Peters.

The Examiner indicates that the cited documents variously teach the features of some or all of claims 1-3, 7 and 11-13. Applicant wishes to comment on the cited documents as follows:

First, with regards to Longenecker, the applicant respectfully points out that the mixing apparatus of Longenecker does not pick up the material at the periphery of the mixing drum head and throw it towards the open end. The apparatus of Longenecker appears to be inclined to direct material towards the centre of the drum head in the hope that this will dislodge the compacted concrete. The only way in which Longenecker can reverse the flow of materials in the drum is to reverse the direction of rotation of the drum - see Longenecker column 3 lines 46 to 72. This not only risks discharging small amounts of concrete but is also time consuming. Such mixers have to have a discharge door (see column 4 line 18) to prevent such discharge. Due to high maintenance costs such mixers having discharge doors have not been used for over 60 years.

Peters is an old patent specification which appears to date back to a time when on-site mixing was required. Thus, no water was permitted to be added to the dry materials until the mixer was on site. Such requirements no longer apply. Thus the requirement for water to be directed to the near the drum head to ensure its mixing with the dry mix is obsolete. Peters does appear to show scoops or buckets at the very end of the mixing blades near the drum head. Whilst these might lift a portion of the contents of the drum to the top of the drum, they would only work with very wet high slump concrete. Peters would not work with medium or low slump concrete which would become wedged in the acute blade angles of the scoops or buckets. This is a significant problem with Peters as a large amount of low and medium slump concrete is used today, particularly in freeway, bridges and formwork where critical mass concrete having very high strength is needed.

A further problem with Peters (which Pawley also shares) is that the scoops block off a triangular gap between the end of the helical mixing blade and the drum head which is present in most mixers in use today. The unmixed concrete is driven to the drum head of the mixer by the screw effect of the helical mixing blade. However with Peters the absence of the triangular gap prevents the flow of materials at the drum

head as the drum turns, as the gap is effectively blocked by the scoops, and virtually creates lack of flow and compaction of unmixed materials.

Backman is a central drum mixer, (such as are discussed in general on page 2 line 24 to page 3 line 9) as opposed to a fixed inclined axis transit mixer, of the type which is truck mounted. Drum mixers such as Backman must be tilted at 60% for discharge, which is clearly not practical for a transit mixer.

Christenson uses a single mixing flight and a shorter flight of the same pitch and direction of flow towards the drum head to achieve mixing. The mixer does not have any blades which induce a reverse flow of materials. The problem with a single flight design mixer such as Christenson is that a surge of discharging materials is produced on every revolution during discharge of the drum. Christenson tries to minimize this by adding extra short discharge blades up near the mouth of the drum. Christenson differs from existing mixers only in that one of its flights is shorter. It does not disclose a mixer having a blade which extends in a first clockwise or anti-clockwise sense and a second opposite sense to the first sense.

With regards to Schwing, this does not show the spillway and the larger outer blades would largely overwhelm any effect caused by the inner blades rendering them ineffective. The materials would be screwed to the drum head and the smaller inner blades would not be able to lift and return the mix towards the drum head. Even if the inner blades were to effect movement of the materials towards the open end of the drum, it would not lift the mixture to cause a cascading action.

With regards to Kabaya, the four blades or paddles shown in Kabaya are in line with the axis and would only have the effect of turning the concrete mixture around and would not move it laterally to assist in the end to end movement of the concrete, necessary to achieve uniformity of mixing.

Pawley also does not have any reverse flow capabilities. It appears to rely on vents along the length of each spiral to allow some portion of the materials to flow from one flight. It does not induce an end to end mixing action in the mixer.

Claim Rejections - 35 USC § 103

The applicant notes the obviousness rejection under 35 USC § 103 to claims 3-6, 8-9, 14 and 18. In view of the amendments made to claim 1 to include the spillway

feature of claim 10 deemed allowable by the Examiner, it is believed that these rejections are resolved.

It is respectfully submitted that all the Examiner's objections and rejections have been addressed and the claims are in an allowable condition.

For at least the reasons stated above, Applicant respectfully submits that the present application is in complete condition for allowance. Should any issues or questions remain after review of this Response, Examiner Soohoo is invited and encouraged to telephone the undersigned at his convenience.

Please charge any additional fees required to Deposit Account No. 04-1403.

Respectfully submitted,

July 23, 2008
Date



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